

# Large-Area, Self-Sufficient, Low-Cost MEMS Skin with Integrated Wireless Communication Capability, Phase II

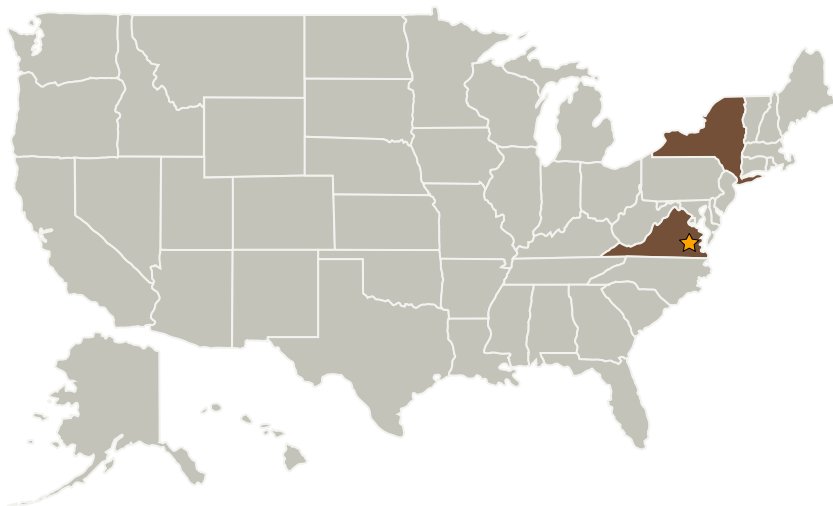
Completed Technology Project (2004 - 2006)



## Project Introduction

One of the ultimate goals of sensor research is to build an integrated unit that harnesses its energy from its surroundings and reacts to, and transmits, any changes in its environment in a predictable and reliable manner. There are several components to this universal goal of a self-contained sensor unit: the power module, the sensor module, the control module, and the transmission module. The goal of this proposal is to develop a whole class of truly stand-alone, large-area, distributed sensor systems on a flexible substrate ? a MEMS skin. The Phase II program will deliver a suite of novel processes to fabricate large-format, self-sufficient sensors on flexible, multilayer substrates. The first layer, a copper-on-flex substrate, acts as the interconnect layer for power distribution. The second, a Si-on-flex substrate, utilizes a thin-film a-Si solar cell, integrated with Anvik's technology to integrate MEMS and IC devices. The two substrate layers are connected using photoablated micro-via patterns in the Si-on-flex layer. These sensors could include strain gauges for surface stress measurements, IR imagers, environment pollution/quality monitoring, etc. Our results in Phase I have given us an excellent footing to launch our Phase II workplan and to layout a preliminary Phase III commercialization strategy.

## Primary U.S. Work Locations and Key Partners



Large-Area, Self-Sufficient, Low-Cost MEMS Skin with Integrated Wireless Communication Capability, Phase II

## Table of Contents

Project Introduction	1
Primary U.S. Work Locations and Key Partners	1
Organizational Responsibility	1
Project Management	2
Technology Areas	2

## Organizational Responsibility

### Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

### Lead Center / Facility:

Langley Research Center (LaRC)

### Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

## Large-Area, Self-Sufficient, Low-Cost MEMS Skin with Integrated Wireless Communication Capability, Phase II

Completed Technology Project (2004 - 2006)



Organizations Performing Work	Role	Type	Location
★ Langley Research Center(LaRC)	Lead Organization	NASA Center	Hampton, Virginia
Anvik Corporation	Supporting Organization	Industry	Hawthorne, New York

### Primary U.S. Work Locations

New York	Virginia
----------	----------

## Project Management

### Program Director:

Jason L Kessler

### Program Manager:

Carlos Torrez

## Technology Areas

### Primary:

- TX05 Communications, Navigation, and Orbital Debris Tracking and Characterization Systems
  - └ TX05.2 Radio Frequency
    - └ TX05.2.7 Innovative RF Technologies